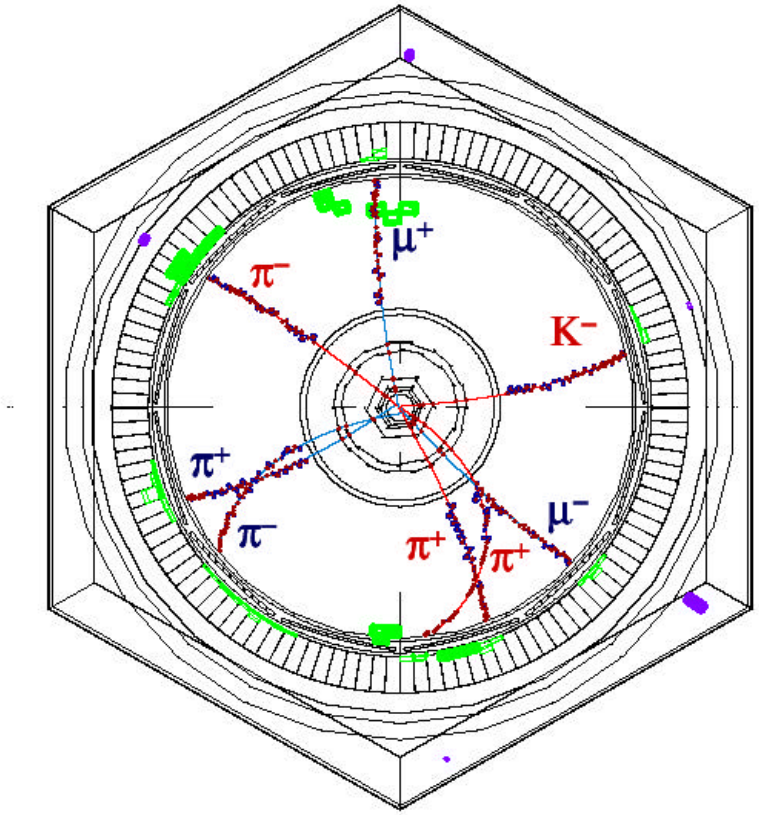
SLAC B Factory Update



By Jonathan Dorfan,Director SLAC

HEPAP Meeting, February 9, 2004

SLAC B Factory: Status

- Run 4 began in Fall 2003 -- Off to an excellent start
  - Within a month of turn-on, PEP-II had returned to the best performance levels of Run 3
  - We have set aggressive goals for this run: if we continue to perform at the current level, by August 2004 Babar will have doubled the data sample size it had accumulated in Runs 1-3 (1999-summer 2003)
  - Recent improvements reflect the difference between having a very challenging budget in FY03 versus a fully adequate budget in FY04

SLAC B Factory: Status

- Babar is a highly productive “Physics Fountain”
  - 50 papers published in 2003 -- mostly in PRL and mostly in the category of “best of” including CP asymmetries for a broad range of B decays and the discovery of a new heavy charmed meson
- Enormously exciting, discovery-oriented, physics agenda remains to be done
  - Tantalizing asymmetry results from the Babar and Belle groups in the area of charmless B decays including B ?? ?'?'?''' ???K_s''' ???' K_s,……
    - NEEDS MORE DATA TO RESOLVE

SLAC B Factory: Status

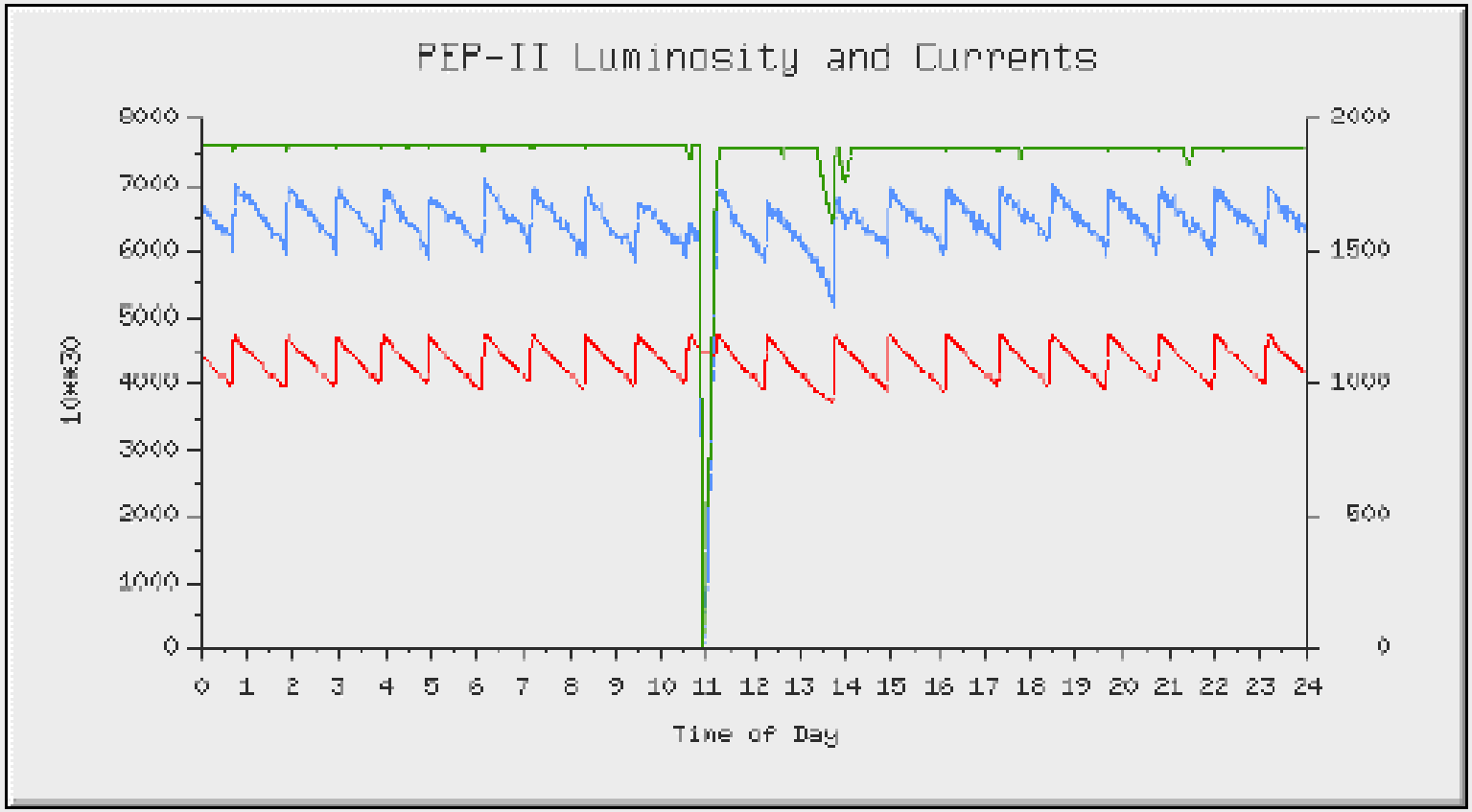
- Continued Worldwide Interest in B Factory Physics
  - Babar Collaboration continues to grow – Holland joined last year, Spain will join this month, bringing the total collaboration to almost 600 physicists from 11 Nations
- Babar Community strongly committed to experiment through to 2010
- A recent poll by the Babar Spokesman of Europeans established that, with the exception of one country, the countries are committed to 2010. Numbers of collaborators expected to stay ~ constant in LHC era

I HER	I LER	Luminosity	Spec Lum	E HER	E LER	E CM
1031.50	1890.02	6272	4.25	8894	3119	10592
mA	mA	10**30/Sec	N*10**30 / mA**2/Sec	MeV	MeV	MeV

HER N Buckets / Pattern: 1320 by2_t14_her_no_fb_pilot

LER N Buckets / Pattern: 1320 by2_t14_ler_no_fb_pilot

Last Owl/Day/Swing/24hr	178.4	164.3	177.9	520.6	Shift:	0.38 /pb
Peak Luminosities	7100	7005	7049			6349



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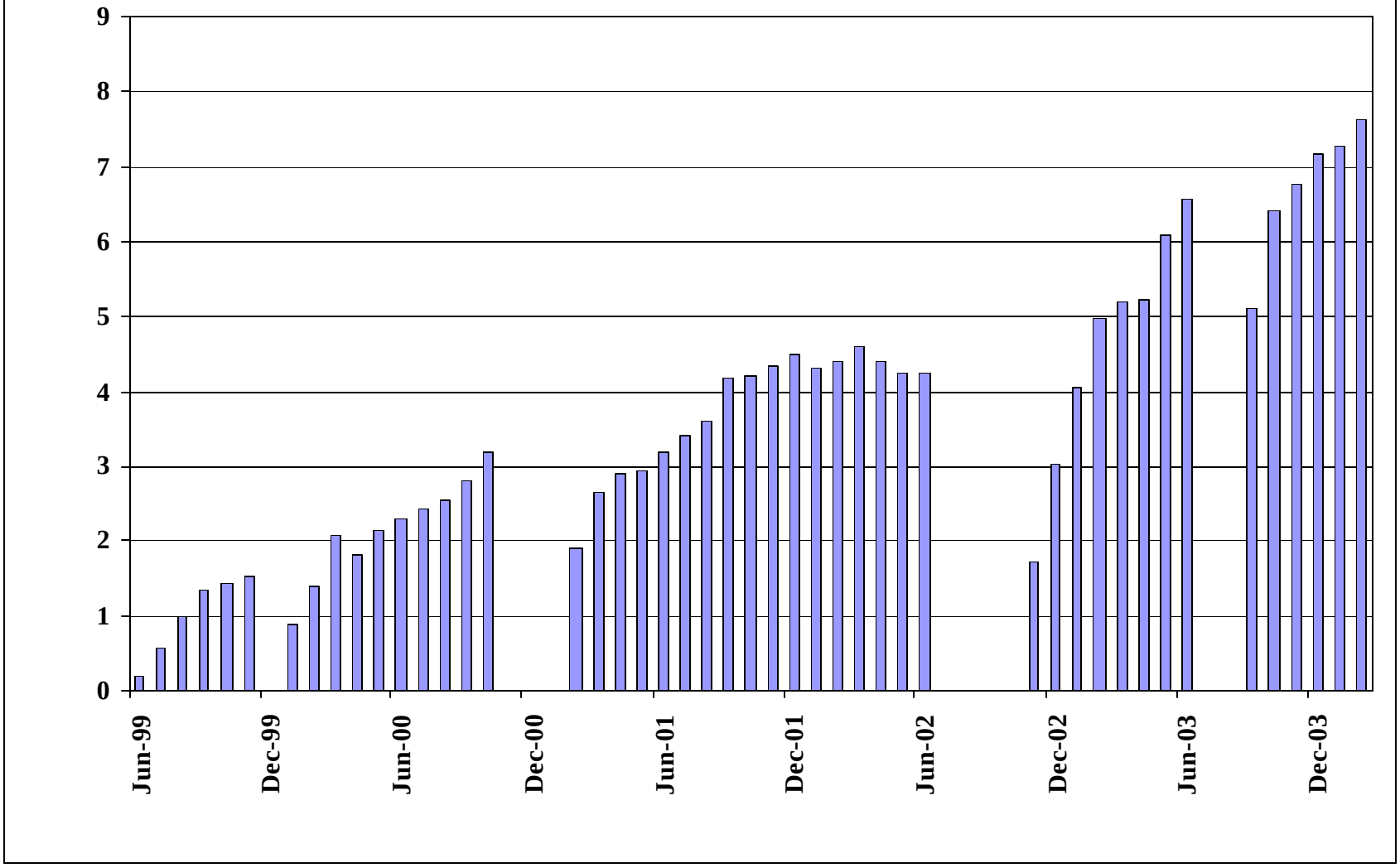
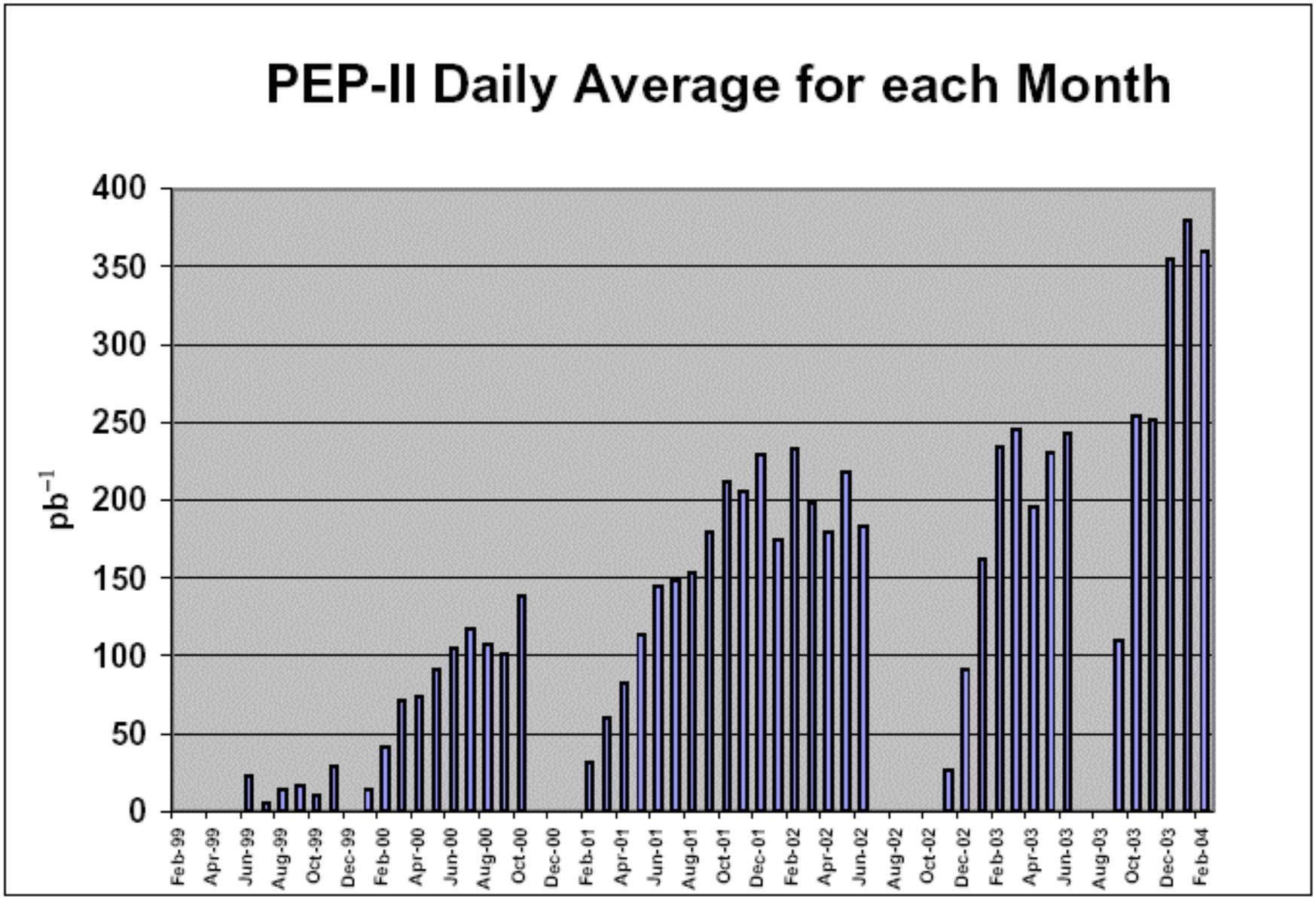
Peak PEP-II Luminosity (x1E33) per Month




PEP-II Daily Average for each Month
pb^{-1}
400
350
300
250
200
150
100
50
0
Feb-99
Apr-99
Jun-99
Aug-99
Oct-99
Dec-99
Feb-00
Apr-00
Jun-00
Aug-00
Oct-00
Dec-00
Feb-01
Apr-01
Jun-01
Aug-01
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
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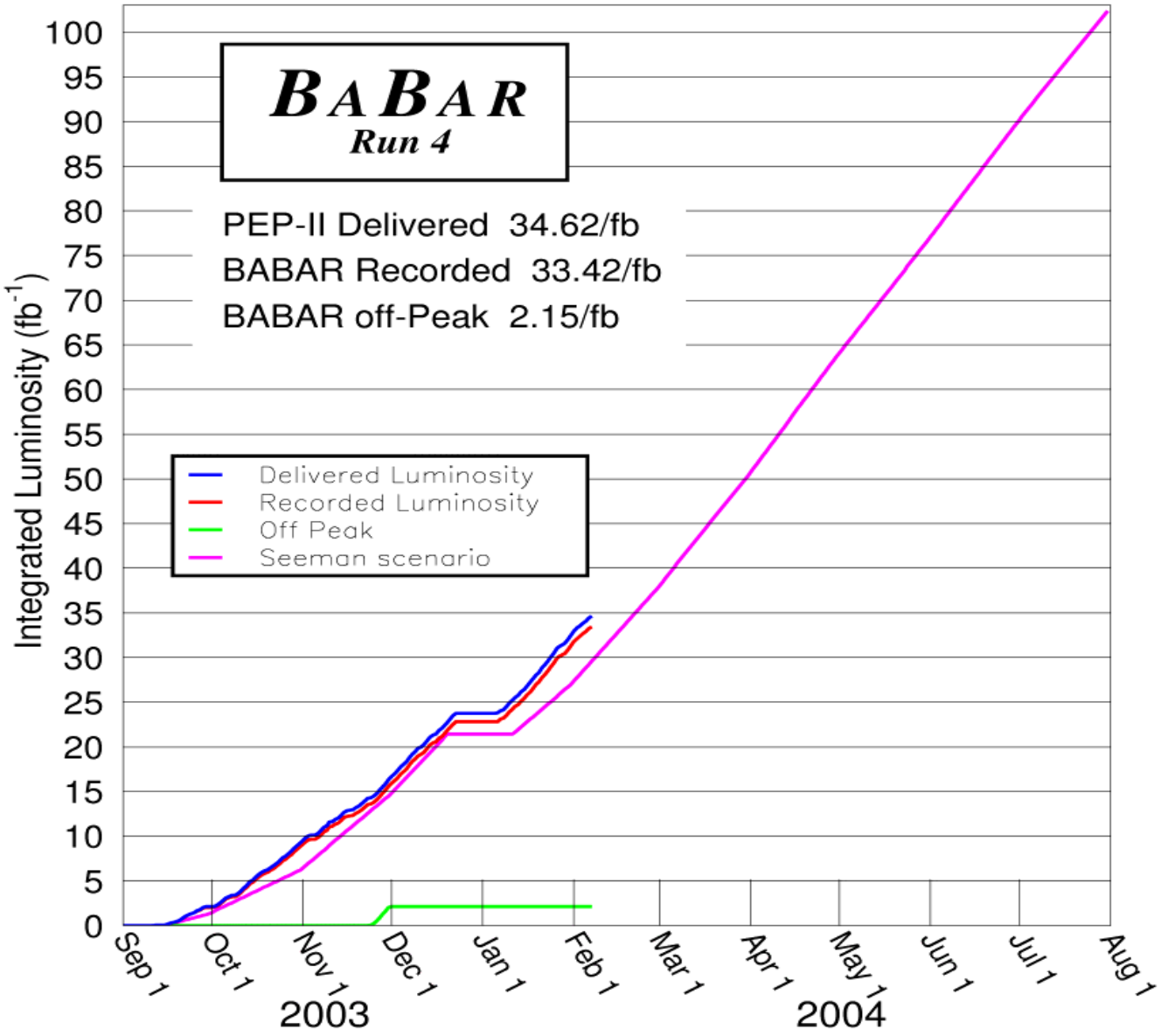
Jun-03
Aug-03
Oct-03
Dec-03
Feb-04

2004/02/07 09.19



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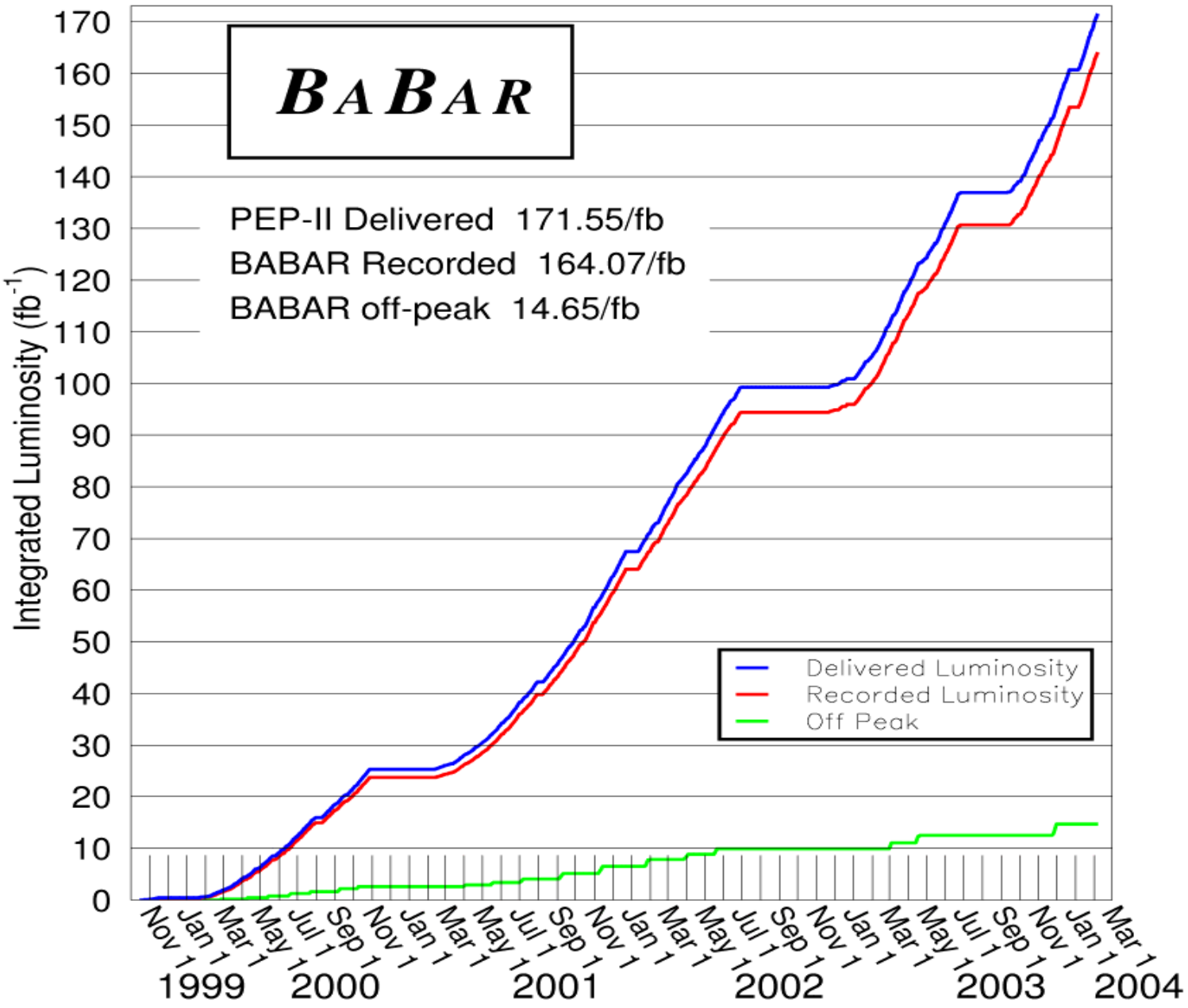

PEP-II Records

Last update:
Feb 6, 2004

Peak Luminosity

7.478×10^{33} $cm^{-2}sec^{-1}$ **Feb 6, 2004**

1366 bunches 2100 mA LER 1350 mA HER

Integration records of delivered luminosity

Best shift (8 hrs, 0:00, 08:00, 16:00)	180.0 pb^{-1}	**Feb 1, 2004**
Best 3 shifts in a row	520.6 pb^{-1}	**Jan 26, 2004**
Best day	520.6 pb^{-1}	**Jan 26, 2004**
Best 7 days (0:00 to 0:00)	2.936 fb^{-1}	**Jan 20-Jan 26, 2004**
Best week (Sun 0:00 to Sat 24:00)	2.865 fb^{-1}	**Jan 18-Jan 24, 2004**
Peak Ave Lum	6.509×10^{33}	**Feb 3, 2004**
Best 30 days	10.244 fb^{-1}	**Jan 7 – Feb 5, 2004**
Best month	8.668 fb^{-1}	**January 2004** (25 days)

Total delivered

174 fb^{-1}

SLAC B Factory: Conclusions

- Run 4, begun last Fall, is off to a good start
  - If PEP-II continues its current level of performance, we have an excellent chance to double the size of data sample that Babar had in Summer 2003
- Physics output continues to be prodigious and cutting-edge
- Babar Collaboration continues to grow
  - Holland joined last year, Spain will join this month, bringing the total collaboration to almost 600 physicists from 11 Nations
  - Strong commitment through to 2010